

Instalar, configurar e solucionar problemas do Plano de numeração internacional (INNP)

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Introduction

Este documento descreve como instalar, configurar e solucionar problemas do INNP.

O Cisco Unified Communications Manager (CUCM) fornece um plano de numeração norte-americano (NANP) padrão. Para países com diferentes requisitos de plano de discagem, você pode instalar um plano de discagem internacional da Cisco e usá-lo para criar um plano de numeração exclusivo que seja específico aos seus requisitos.

Prerequisites

Requirements

A Cisco recomenda que você tenha conhecimento destes tópicos:

- Roteamento de chamada
- Filtro de rota

Componentes Utilizados

As informações neste documento são baseadas no Cisco Unified CallManager 11.5.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Informações de fundo

Se você estiver instalando um plano de numeração nacional para países fora da América do Norte, faça o download do arquivo Cisco Option Package (COP) que contém os planos de discagem internacionais para a versão atual.

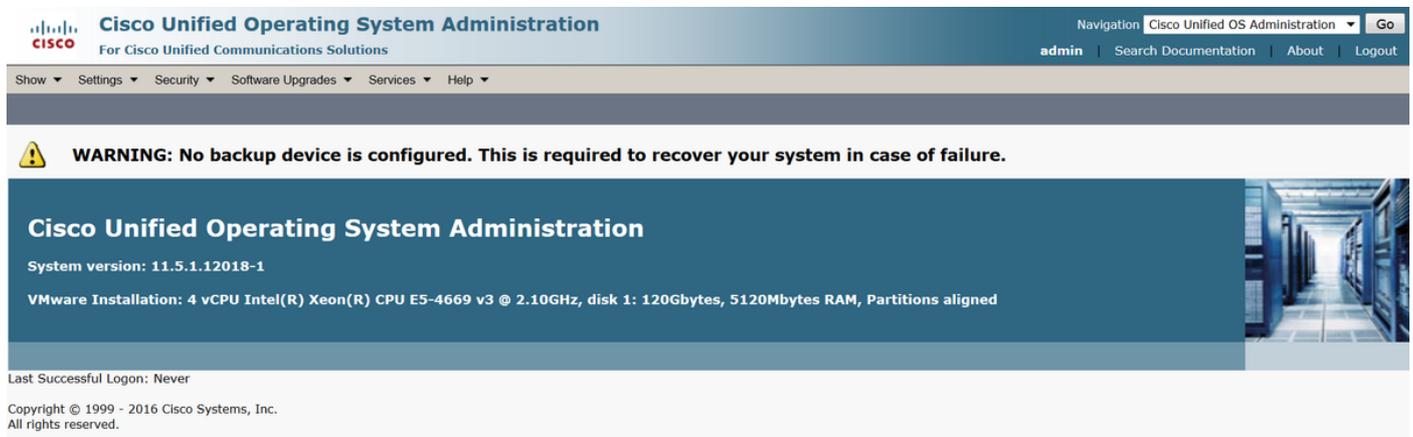
O arquivo COP usa a convenção de nomenclatura e está disponível no site da Cisco:

<https://software.cisco.com/download/release.html?mdfid=278719042&softwareid=282074292&os=Linux&release=3.1.33-GB&relind=AVAILABLE&rellifecycle=&reltype=latest>

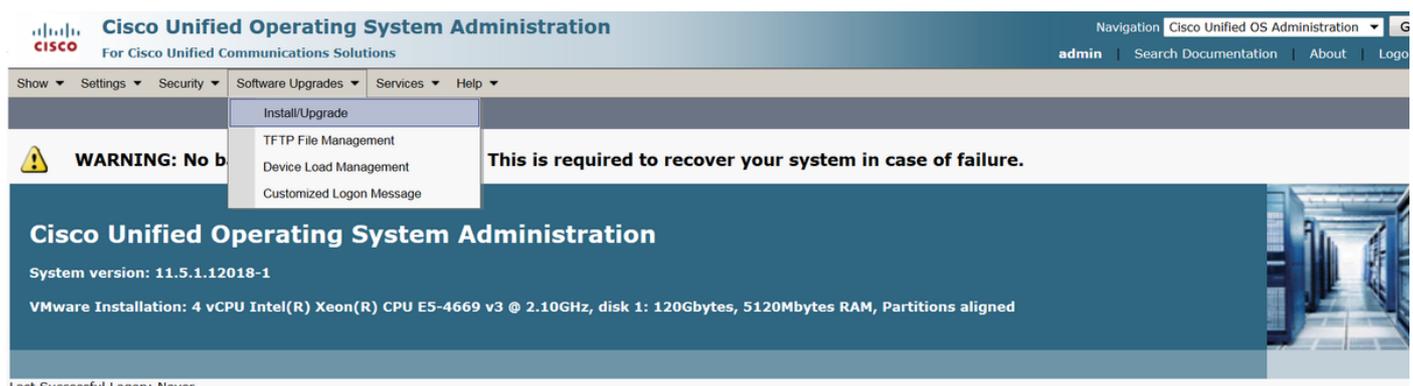
Configurar

Este é o procedimento para instalar o arquivo de cópia INNP.

Etapa 1. Faça login no OS Admin.



Etapa 2. Navegue até **Software Upgrade > Install/Upgrade**, como mostrado na imagem:



Selecione a origem: Aqui estamos usando o servidor SFTP para executar a instalação/atualização.

Fonte: Sistema de arquivos remoto

Diretório: /

Servidor: Aqui você deve manter o aplicativo SFTP executando o endereço IP do laptop/desktop.

User Name: Nome de usuário SFTP.

Senha do usuário: Senha do usuário SFTP.

Protocolo de transferência: SFTP

Software Installation/Upgrade

Cancel Next

Status

Status: Ready

Software Location

Source* Remote Filesystem

Directory* /

Server* 192.168.0.20

User Name* admin

User Password* [masked]

Transfer Protocol* SFTP

SMTP Server

Email Destination

Cancel Next

Etapa 3. Selecione **Next** (Avançar) e a tela, como mostrado na imagem, será exibida.

Você deve selecionar o arquivo de policial correto para INNP e, em seguida, selecionar **Avançar**.

Software Installation/Upgrade

Cancel Next

Status

Status: Ready

Software Location

Options/Upgrades* dp-ffr.3-1-8.IN.k3.cop.sgn

Invalid Upgrades

Option Names	Status
10.196.120.25_bulk_tftp.pkcs12	Name does not match any filter pattern.
Publisher_tomcat.pkcs12	Name does not match any filter pattern.
CUCM-PUB_tomcat.pkcs12	Name does not match any filter pattern.

Você obtém a tela como mostrado na imagem. Selecione **Avançar**.

Software Installation/Upgrade

Cancel Next

Status

- Warning:** To ensure the integrity of the installation file, please verify the MD5 hash value against the Cisco Systems web site
- Warning:** To ensure the integrity of the installation file, please verify the SHA512 value against the Cisco Systems web site
- Warning:** You may need to stop some services before you install a locale. You may then restart those services after you complete the locale installation. Refer to your product-specific online help for locale installation details.

File Checksum Details

File	dp-ffr.3-1-8.IN.k3.cop.sgn
MD5 Hash Value	28:36:a4:74:45:48:32:c3:85:3e:3f:8b:b4:40:21:28
SHA512 Value	

Cancel Next

i *- indicates required item.

Etapa 4. A instalação está em andamento:

Cancel

Installation Status

File	dp-ffr.3-1-8.IN.k3.cop.sgn
Start Time	Wed Dec 28 15:20:08 IST 2016
Status	Running

Installation Log

```

12/28/2016 15:20:08 sd_cancelInstall.sh|Canceling active side processes done
12/28/2016 15:20:08 sd_cancelInstall.sh|Canceling inactive side processes
12/28/2016 15:20:08 sd_cancelInstall.sh|Skipping IDS shared memory clean up since this is a COP
12/28/2016 15:20:09 sd_cancelInstall.sh|Canceling inactive side processes done
[16/12/28_15:20:14] locale_install.sh: Successful untarring of /common/download//dp-ffr.3-1-8.IN.k3.cop

Call manager version is : master-11.5.1.12018-1.i386
cp: cannot stat `/common/download/IDP': No such file or directory

cp: cannot stat `/common/download/INNP.xml': No such file or directory

```

Cancel

Etapa 5. Instalação concluída.

Install Another

Installation Status

File	dp-ffr.3-1-8.IN.k3.cop.sgn
Start Time	Wed Dec 28 15:20:08 IST 2016
Status	Complete

Installation Log

```

installCsv rc[0]
enablenotify dsn[DSN=ccm_super]
enablenotify rc[0]
installdb Success[-c]
[16/12/28_15:20:17] locale_install.sh: Publisher: Starting installdb...
/bin/su -l informix -s /bin/sh -c
"source /usr/local/cm/db/dblenv.bash /usr/local/cm ;
source /usr/local/cm/db/informix/local/ids.env ;
nice /usr/local/cm/bin/installdb -x /usr/local/cm/db/xml/xml"

```

Install Another

Execute a mesma operação para todos os nós no cluster.

Configuração da INNP

Etapa 1. Em Cisco Unified CM Administration, navegue para Call Routing > Dial Plan Installer.

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration **Go**

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

WARNING: No backup device is configured. This is required to recover your system in case of failure.

Cisco Unified CM Administration
System version: 11.5.1.12018-1
VMware Installation: 4 vCPU Intel(R) Xeon(R) CPU E5-4669 v3 @ 2.10GHz, disk 1: 120Gbytes, 5120Mbytes RAM, Partitions aligned

User c last logged in to this cluster on Wednesday, December 28, 2016 3:03:54 PM IST, to node 10.106.99.199, from 10.196.120.192 using HTTPS

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

WARNING: No backup device is configured. This is required to recover your system in case of failure.

Cisco Unified CM Administration
System version: 11.5.1.12018-1
VMware Installation: 4 vCPU Intel(R) Xeon(R) CPU E5-4669 v3 @ 2.10GHz, disk 1: 120Gbytes, 5120Mbytes RAM, Partitions aligned

User c last logged in to this cluster on Wednesday, December 28, 2016 3:03:54 PM IST, to node 10.106.99.199, from 10.196.120.192 using HTTPS

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Advanced Features | Device | Application | User Management | Bulk Administration | Help

Route Filter
Route/Hunt
SIP Route Pattern
Class of Control
Intercom
Client Matter Codes
Forced Authorization Codes
Emergency Location
Translation Pattern
Call Park
Directed Call Park
Call Pickup Group
Directory Number
Meet-Me Number/Pattern
Conference Now
Dial Plan Installer
Route Plan Report

Etapa 2. Clique em **Find and Select INNP**, como mostrado na imagem:

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

Find and List Dial Plans

Status
2 records found

Dial Plan (1 - 2 of 2)

Find Dial Plan where Dial Plan begins with **Find** **Clear Filter** **+** **=**

Dial Plan	Description	Installed Version	System Version
CHNP	Switzerland Numbering Plan	1.1(6)	1.1(6)
INNP	India Numbering Plan	1.1(8)	1.1(8)

Etapa 3. Como mostrado na imagem, clique em **Instalar**.

Dial Plan Configuration

Install **Uninstall**

Dial Plan Information

Dial Plan*

Description

Installed Version

Available Version

Install **Uninstall**

Quando a instalação do arquivo cop estiver concluída, reinicie o **serviço CM** em todos os nós.

Cláusulas no INNP

First understand the clauses in the INNP:

```
# P: Digit pattern -- PATTERN TAG
# T: Type of Number -- I(nternational) or N(ational)
# W: Network Specific Facilities -- OP or OPXXXX(alternate carriers)
# U: Urgent pattern? (Call extended immediately on match)
```

```
# [2-6]XXXXXX
P: [2-6]XXXXXX          LOCAL-6-DIGIT
```

```
# [2-6]XXXXXXX
P: [2-6]XXXXXXX        LOCAL-7-DIGIT
```

```
# [2-6]XXXXXXXX
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
```

Long Distance Calls

```
# 0+11+[2-6]XXXXXXXX
P: 0                    NATIONAL-ACCESS
P: 11                   AREA-CODE
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
T: N
```

```
# 0+2[02]+[2-6]XXXXXXXX
P: 0                    NATIONAL-ACCESS
P: 2[02]                AREA-CODE
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
T: N
```

```
# 0+33+[2-6]XXXXXXXX
P: 0                    NATIONAL-ACCESS
P: 33                   AREA-CODE
P: [2-6]XXXXXXXX        LOCAL-8-DIGIT
T: N
```

Services, Mobile & Non Geographic Calls

```
# 100
P: 100                 SERVICE
U: Y
```

```
# 101
P: 101                 SERVICE
U: Y
```

```
# 80[01589]X+XXX+XXX
P: 80[01589]X         LOCAL-PREFIX-8-MOBILE
P: XXX                MOBILE-ACCESS
P: XXX                MOBILE-SUBSCRIBER
T: N
```

```
# 81XX+XXX+XXX
P: 81XX               LOCAL-PREFIX-8-MOBILE
P: XXX                MOBILE-ACCESS
P: XXX                MOBILE-SUBSCRIBER
```

T: N

8128+XXX+XXX

P: 8128 LOCAL-PREFIX-8-MOBILE

P: XXX MOBILE-ACCESS

P: XXX MOBILE-SUBSCRIBER

T: N

8149+XXX+XXX

P: 8149 LOCAL-PREFIX-8-MOBILE

P: XXX MOBILE-ACCESS

P: XXX MOBILE-SUBSCRIBER

T: N

Para obter mais detalhes, consulte o link abaixo para ver as cláusulas INNP:

<http://www.cisco.com/web/software/282074292/122537/INNP.txt>

Com base nas informações acima, criaremos o filtro de rota.

Exemplo:

Seu requisito é criar um filtro de chamada local que permita somente chamadas locais.

Cenário: O ramal 3001 deve ligar para o número móvel local começando com 7,8 e 9.

O ramal 3001 deve ligar para o número da linha fixa local (8 dígitos).

O ramal 3001 tem que bloquear o STD e a discagem de chamada nacional.

Etapa 1. Criar nova partição - PT-LOCAL

Navegue até **Roteamento de chamada > Classe de controle >Partição**.

Partition Configuration

 Save  Delete  Reset  Apply Config  Add New

Status

 Status: Ready

Partition Information

Name*

Description

Time Schedule

Time Zone Originating Device
 Specific Time Zone

 *- indicates required item.

Etapa 2. Criar novo CSS - CSS-Local

Navegue até **Roteamento de chamada > Classe de controle > Espaço de pesquisa de chamada.**

Neste CSS, você mantém a partição PT-LOCAL.

Calling Search Space Configuration

 Save  Delete  Copy  Add New

Status

 Status: Ready

Calling Search Space Information

Name*
Description

Route Partitions for this Calling Search Space

Available Partitions**
Global Learned E164 Numbers
Global Learned E164 Patterns
Global Learned Enterprise Numbers
Global Learned Enterprise Patterns

▼ ▲

Selected Partitions

▼ ▲

Etapa 3. Criar filtro do roteador.

Navegue até **Roteamento de chamada > Filtro de rota**.

Clique em **Adicionar novo**, conforme mostrado na imagem:

Find and List Route Filters

 Add New

Route Filter

Find Route Filter where Route Filter Name
  

No active query. Please enter your search criteria using the options above.

Como mostrado na imagem, selecione o plano de numeração.

Route Filter Configuration



Status

 Status: Ready

Route Filter Information

Numbering Plan*

 *- indicates required item.

Esses filtros são criados conforme o requisito.

Route Filter Name*	Local
Numbering Plan	India Numbering Plan
Clause	(LOCAL-PREFIX-7-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-8-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-9-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-8-DIGIT EXISTS)

Clause Information

To add a clause within this Route Filter, click Add Clause.

<input type="button" value="Edit Clause"/>	<input type="button" value="Remove Clause"/>	
LOCAL-PREFIX-7-MOBILE	<input type="text" value="EXISTS"/>	AND
MOBILE-ACCESS	<input type="text" value="EXISTS"/>	AND
MOBILE-SUBSCRIBER	<input type="text" value="EXISTS"/>	
OR		
<input type="button" value="Edit Clause"/>	<input type="button" value="Remove Clause"/>	
LOCAL-PREFIX-8-MOBILE	<input type="text" value="EXISTS"/>	AND
MOBILE-ACCESS	<input type="text" value="EXISTS"/>	AND
MOBILE-SUBSCRIBER	<input type="text" value="EXISTS"/>	
OR		
<input type="button" value="Edit Clause"/>	<input type="button" value="Remove Clause"/>	

LOCAL-PREFIX-8-MOBILE	EXISTS	▼	AND
MOBILE-ACCESS	EXISTS	▼	AND
MOBILE-SUBSCRIBER	EXISTS	▼	
OR			
Edit Clause	Remove Clause		
LOCAL-PREFIX-9-MOBILE	EXISTS	▼	AND
MOBILE-ACCESS	EXISTS	▼	AND
MOBILE-SUBSCRIBER	EXISTS	▼	
OR			
Edit Clause	Remove Clause		
LOCAL-8-DIGIT	EXISTS	▼	

Etapa 4. Criar padrão de rota.

Navegue até **Roteamento de chamada > Rota/busca > Padrão de rota.**

Pattern Definition

Route Pattern*	9.@	Here we have created the 9.@ pattern
Route Partition	PT-LOCAL	Keep the PT-LOCAL partition
Description		
Numbering Plan*	INNP	Select the numbering plan
Route Filter	Local	Select the Route Filter created for Local calling.
MLPP Precedence*	Default	
<input type="checkbox"/> Apply Call Blocking Percentage		
Resource Priority Namespace Network Domain	< None >	
Route Class*	Default	
Gateway/Route List*	Chandra-CUCM	(Edit)
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern No Error	
Call Classification*	OffNet	
External Call Control Profile	< None >	
<input type="checkbox"/> Allow Device Override <input checked="" type="checkbox"/> Provide Outside Dial Tone <input type="checkbox"/> Allow Overlap Sending <input type="checkbox"/> Urgent Priority		

Connected Party Transformations

Connected Line ID Presentation*	Default
Connected Name Presentation*	Default

Called Party Transformations

Discard Digits	< None >
Called Party Transform Mask	
Prefix Digits (Outgoing Calls)	
Called Party Number Type*	Cisco CallManager
Called Party Numbering Plan*	Cisco CallManager

ISDN Network-Specific Facilities Information Element

Network Service Protocol	-- Not Selected --	
Carrier Identification Code		
Network Service	Service Parameter Name	Service Parameter Value
-- Not Selected --	< Not Exist >	

Verifique se a extensão de teste tem o CSS (CSS-Local) correto.

Directory Number* Urgent Priority

Route Partition

Description

Alerting Name

ASCII Alerting Name

External Call Control Profile

Allow Control of Device from CTI

Line Group [Edit Line Group](#)

Associated Devices
 [Edit Device](#)
[Edit Line Appearance](#)

Dissociate Devices

- Directory Number Settings

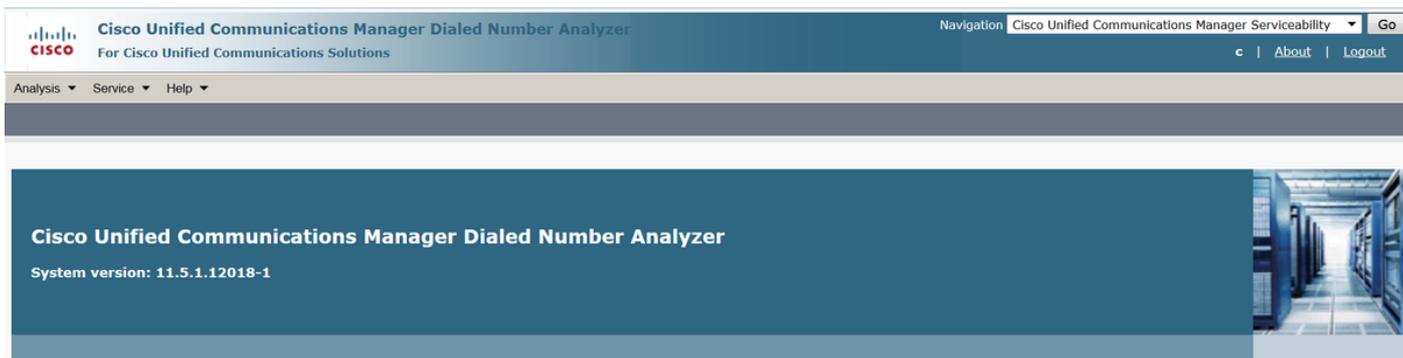
Voice Mail Profile (Choose <None> to use system default)

Calling Search Space

Verificar

Verificação da configuração:

Etapa 1. Em **Dial Number Analyzer**, navegue para **Analysis > Phones**.



Digite o ramal 3001 e clique em **Localizar**.

Analysis > Service > Help

Find and List Phones

Status
i 1 records found

Search Options
 Find Phone where: Directory Number [Find](#) Search Within Results
 Select item or enter search text

Search Results

Device Name(Line)	Description	Device Pool	Extension	Partition	Device Protocol	Status	IP Address
7841 SEP00E16DBA5FD5	Auto 3003	HQ	3001	PT-CUG	SIP	Registered	10.106.99.249

Rows per Page 50

- Device Information (Model = Cisco 7841)

Registration	Registered with Cisco Unified CallManager 10.106.99.199
IP Address	10.106.99.249
MAC Address	00E16DBA5FD5
Device Name	00E16DBA5FD5
Description	Auto 3003
Owner User ID	cisco3
Device Pool	HQ
Call Classification	OnNet
Calling Search Space	None
AAR Calling Search Space	None
Media Resource Group List	None
Device Time Zone	Etc/GMT

Association Information

-  Line [1] - 3001 in PT-CUG
-  Line [2] - 3006 in PT-CUG
-  Line [3] - 8888 (no partition)

- Analyzer Input

Dialed Digit Settings

- Directory URI
- Dialed Digits

Etapa 2. Quando você clica em **Do Analysis**, uma página é exibida com todos os detalhes e o filtro correto, como mostrado na imagem:

Cisco Unified Communications Manager Dialed Number Analyzer Results

Expand All

Collapse All

Results Summary

Calling Party Information

- **Dialed Digits** = 944262527
- **Match Result** = RouteThisPattern

Matched Pattern Information

- **Pattern** = 9.@
- **Partition** = PT-LOCAL
- **Time Schedule** =
- **Called Party Number** = 944262527
- **Time Zone** = Etc/GMT
- **End Device** = Chandra-CUCM
- **Call Classification** = OffNet
- **InterDigit Timeout** = NO
- **Device Override** = Disabled
- **Outside Dial Tone** = NO

Call Flow

Route Pattern :Pattern= 9.@

- **Positional Match List** = 9:44262527
- **DialPlan** = India Numbering Plan

Route Filter

- **Filter Name** = Local
- **Filter Clause** = (LOCAL-PREFIX-7-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-8-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-9-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-8-DIGIT EXISTS)
- **Require Forced Authorization Code** = No
- **Authorization Level** = 0

Troubleshoot

O filtro de rota configurado funciona bem, mas tem um problema. Se você discou o número STD com código de área de dois dígitos, a chamada passa.

Exemplo: Se você discar o número 080 26252728, ele roteará a chamada com o filtro local.

Cisco Unified Communications Manager Dialed Number Analyzer Results

Expand All Collapse All

Results Summary

Calling Party Information

- **Dialed Digits** = 908026252728
- **Match Result** = RouteThisPattern

Matched Pattern Information

- **Pattern** = 9.@
- **Partition** = PT-LOCAL
- **Time Schedule** =
- **Called Party Number** = 908026252728
- **Time Zone** = Etc/GMT
- **End Device** = Chandra-CUCM
- **Call Classification** = OffNet
- **InterDigit Timeout** = NO
- **Device Override** = Disabled
- **Outside Dial Tone** = NO

Call Flow

Route Pattern :Pattern= 9.@

- **Positional Match List** = 9:0:80:26252728
- **DialPlan** = India Numbering Plan

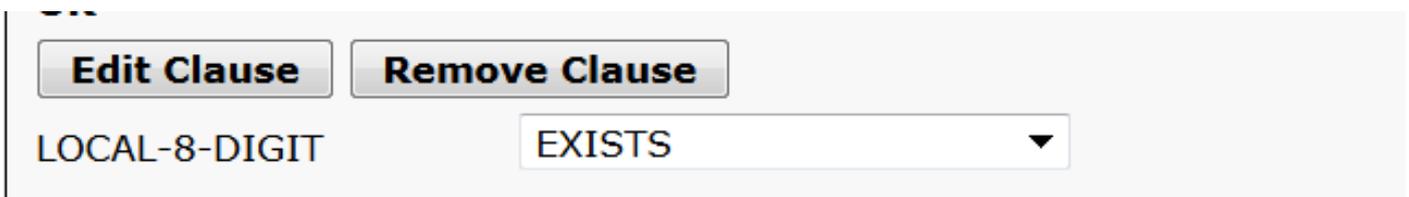
Route Filter

- **Filter Name** = Local
- **Filter Clause** = (LOCAL-PREFIX-7-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-8-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-PREFIX-9-MOBILE EXISTS AND MOBILE-ACCESS EXISTS AND MOBILE-SUBSCRIBER EXISTS) OR (LOCAL-8-DIGIT EXISTS)

O motivo por trás disso é que a chamada para número **local de 8 dígitos** é permitida e corresponde aos 8 dígitos excluindo o código de área.

Então aqui você tem que definir explicitamente no filtro para bloquear o código de área no filtro local.

Etapa 1. Navegue até o **filtro do Roteador e Editar Cláusula para Local 8 Digit**.



Etapa 2. Selecione o **CÓDIGO DE ÁREA DOES-NOT-EXIST** e **Salve** o filtro, como mostrado na imagem:

Clause Information

AREA-CODE

DOES-NOT-EXIST

O filtro tem a aparência abaixo:

Edit Clause	Remove Clause		
AREA-CODE	DOES-NOT-EXIST		AND
LOCAL-8-DIGIT	EXISTS		

Save	Delete	Copy	Reset	Apply Config	Add New
------	--------	------	-------	--------------	---------

Etapa 3. Execute o DNA para o número STD com código de área de dois dígitos.

Cisco Unified Communications Manager Dialed Number Analyzer Results

Expand All Collapse All

- ▼ **Results Summary**
 - ▶ **Calling Party Information**
 - **Dialed Digits** = 908026252728
 - **Match Result** = BlockThisPattern
 - **Route Block Cause** = Unallocated Number
 - **Called Party Number** =
 - ▼ **Matched Pattern Information**
 - **Pattern** =
 - **Partition** =
 - **Pattern Type** =
 - **Time Zone** = Etc/GMT
 - **Outside Dial Tone** = NO
- ▼ **Call Flow**
 - **Note: Information Not Available**
- ▼ **Alternate Matches**
 - **Note: Information Not Available**

Note: Você precisa bloquear explicitamente o padrão que não é obrigatório.